MSI

MICRO-STAR INTERNATIONAL

IM-Q35 Series

MS-9820 (V1.X) Mainboard

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Revision History

Revision	Revision History	Date
V1.0	First release	May 2008

Technical Support

If a problem arises with your system and no solution can be obtained from the user's manual, please contact your place of purchase or local distributor. Alternatively, please try the following help resources for further guidance.

> Visit the MSI website for FAQ, technical guide, BIOS updates, driver updates, and other information: *http://global.msi.com.tw/index.php?func=service*

> Contact our technical staff at: *http://ocss.msi.com.tw*

Safety Instructions

1. Always read the safety instructions carefully.

2. Keep this User's Manual for future reference.

3. Keep this equipment away from humidity.

4. Lay this equipment on a reliable flat surface before setting it up.

5. The openings on the enclosure are for air convection hence protects the equipment from overheating. DO NOT COVER THE OPENINGS.

6. Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.

7. Place the power cord such a way that people can not step on it. Do not place anything over the power cord.

8. Always Unplug the Power Cord before inserting any add-on card or module.

9. All cautions and warnings on the equipment should be noted.

10. Never pour any liquid into the opening that could damage or cause electrical shock.

11. If any of the following situations arises, get the equipment checked by service personnel:

    † The power cord or plug is damaged.
    † Liquid has penetrated into the equipment.
    † The equipment has been exposed to moisture.
    † The equipment does not work well or you can not get it work according to User's Manual.
    † The equipment has dropped and damaged.
    † The equipment has obvious sign of breakage.

12. DO NOT LEAVE THIS EQUIPMENT IN AN ENVIRONMENT UNCONDITIONED, STORAGE TEMPERATURE ABOVE 60⁰C (140⁰F), IT MAY DAMAGE THE EQUIPMENT.

CAUTION: Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.

警告使用者：
這是甲類的資訊產品，在居住的環境中使用時，可能會造成無線電干擾，在這種情況下，使用者會被要求採取某些適當的對策。

廢電池請回收

For better environmental protection, waste batteries should be collected separately for recycling or special disposal.

FCC-B Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the measures listed below.

  † Reorient or relocate the receiving antenna.

  † Increase the separation between the equipment and receiver.

  † Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

  † Consult the dealer or an experienced radio/television technician for help.

Notice 1
The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2
Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

VOIR LA NOTICE D'INSTALLATION AVANT DE RACCORDER AU RESEAU.

Micro-Star International
MS-9820

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) this device may not cause harmful interference, and
(2) this device must accept any interference received, including interference that may cause undesired operation.

iv

WEEE (Waste Electrical and Electronic Equipment) Statement

ENGLISH

To protect the global environment and as an environmentalist, MSI must remind you that...

Under the European Union ("EU") Directive on Waste Electrical and Electronic Equipment, Directive 2002/96/EC, which takes effect on August 13, 2005, products of "electrical and electronic equipment" cannot be discarded as municipal waste anymore and manufacturers of covered electronic equipment will be obligated to take back such products at the end of their useful life. MSI will comply with the product take back requirements at the end of life of MSI-branded products that are sold into the EU. You can return these products to local collection points.

DEUTSCH

Hinweis von MSI zur Erhaltung und Schutz unserer Umwelt

Gemäß der Richtlinie 2002/96/EG über Elektro- und Elektronik-Altgeräte dürfen Elektro- und Elektronik-Altgeräte nicht mehr als kommunale Abfälle entsorgt werden. MSI hat europaweit verschiedene Sammel- und Recyclingunternehmen beauftragt, die in die Europäische Union in Verkehr gebrachten Produkte, am Ende seines Lebenszyklus zurückzunehmen. Bitte entsorgen Sie dieses Produkt zum gegebenen Zeitpunkt ausschliesslich an einer lokalen Altgerätesammelstelle in Ihrer Nähe.

FRANÇAIS

En tant qu'écologiste et afin de protéger l'environnement, MSI tient à rappeler ceci...

Au sujet de la directive européenne (EU) relative aux déchets des équipement électriques et électroniques, directive 2002/96/EC, prenant effet le 13 août 2005, que les produits électriques et électroniques ne peuvent être déposés dans les décharges ou tout simplement mis à la poubelle. Les fabricants de ces équipements seront obligés de récupérer certains produits en fin de vie. MSI prendra en compte cette exigence relative au retour des produits en fin de vie au sein de la communauté européenne. Par conséquent vous pouvez retourner localement ces matériels dans les points de collecte.

РУССКИЙ

Компания MSI предпринимает активные действия по защите окружающей среды, поэтому напоминаем вам, что....

В соответствии с директивой Европейского Союза (ЕС) по предотвращению загрязнения окружающей среды использованным электрическим и электронным оборудованием (директива WEEE 2002/96/EC), вступающей в силу 13 августа 2005 года, изделия, относящиеся к электрическому и электронному оборудованию, не могут рассматриваться как бытовой мусор, поэтому производители вышеперечисленного электронного оборудования обязаны принимать его для переработки по окончании срока службы. MSI обязуется соблюдать требования по приему продукции, проданной под маркой MSI на территории ЕС, в переработку по окончании срока службы. Вы можете вернуть эти изделия в специализированные пункты приема.

ESPAÑOL

MSI como empresa comprometida con la protección del medio ambiente, recomienda:

Bajo la directiva 2002/96/EC de la Unión Europea en materia de desechos y/o equipos electrónicos, con fecha de rigor desde el 13 de agosto de 2005, los productos clasificados como "eléctricos y equipos electrónicos" no pueden ser depositados en los contenedores habituales de su municipio, los fabricantes de equipos electrónicos, están obligados a hacerse cargo de dichos productos al término de su periodo de vida. MSI estará comprometido con los términos de recogida de sus productos vendidos en la Unión Europea al final de su periodo de vida. Usted debe depositar estos productos en el punto limpio establecido por el ayuntamiento de su localidad o entregar a una empresa autorizada para la recogida de estos residuos.

NEDERLANDS

Om het milieu te beschermen, wil MSI u eraan herinneren dat....

De richtlijn van de Europese Unie (EU) met betrekking tot Vervuiling van Electrische en Electronische producten (2002/96/EC), die op 13 Augustus 2005 in zal gaan kunnen niet meer beschouwd worden als vervuiling.

Fabrikanten van dit soort producten worden verplicht om producten retour te nemen aan het eind van hun levenscyclus. MSI zal overeenkomstig de richtlijn handelen voor de producten die de merknaam MSI dragen en verkocht zijn in de EU. Deze goederen kunnen geretourneerd worden op lokale inzamelingspunten.

SRPSKI

Da bi zaštitili prirodnu sredinu, i kao preduzeće koje vodi računa o okolini i prirodnoj sredini, MSI mora da vas podesti da...

Po Direktivi Evropske unije ("EU") o odbačenoj elektronskoj i električnoj opremi, Direktiva 2002/96/EC, koja stupa na snagu od 13. Avgusta 2005, proizvodi koji spadaju pod "elektronsku i električnu opremu" ne mogu više biti odbačeni kao običan otpad i proizvođači ove opreme biće prinudeni da uzmu natrag ove proizvode na kraju njihovog uobičajenog veka trajanja. MSI će poštovati zahtev o preuzimanju ovakvih proizvoda kojima je istekao vek trajanja, koji imaju MSI oznaku i koji su prodati u EU. Ove proizvode možete vratiti na lokalnim mestima za prikupljanje.

POLSKI

Aby chronić nasze środowisko naturalne oraz jako firma dbająca o ekologię, MSI przypomina, że...

Zgodnie z Dyrektywą Unii Europejskiej ("UE") dotyczącą odpadów produktów elektrycznych i elektronicznych (Dyrektywa 2002/96/EC), która wchodzi w życie 13 sierpnia 2005. tzw. "produkty oraz wyposażenie elektryczne i elektroniczne " nie mogą być traktowane jako śmieci komunalne, tak więc producenci tych produktów będą zobowiązani do odbierania ich w momencie gdy produkt jest wycofywany z użycia. MSI wypełni wymagania UE, przyjmując produkty (sprzedawane na terenie Unii Europejskiej) wycofywane z użycia. Produkty MSI będzie można zwracać w wyznaczonych punktach zbiorczych.

TÜRKÇE

Çevreci özelliğiyle bilinen MSI dünyada çevreyi korumak için hatırlatır:

Avrupa Birliği (AB) Kararnamesi Elektrik ve Elektronik Malzeme Atığı, 2002/96/EC Kararnamesi altında 13 Ağustos 2005 tarihinden itibaren geçerli olmak üzere, elektrikli ve elektronik malzemeler diğer atıklar gibi çöpe atılamayacak ve bu elektronik cihazların üreticileri, cihazların kullanım süreleri bittikten sonra ürünleri geri toplamakla yükümlü olacaktır. Avrupa Birliği'ne satılan MSI markalı ürünlerin kullanım süreleri bittiğinde MSI ürünlerin geri alınması isteği ile işbirliği içerisinde olacaktır. Ürünlerinizi yerel toplama noktalarına bırakabilirsiniz.

ČESKY

Záleží nám na ochraně životního prostředí - společnost MSI upozorňuje...

Podle směrnice Evropské unie ("EU") o likvidaci elektrických a elektronických výrobků 2002/96/EC platné od 13. srpna 2005 je zakázáno likvidovat "elektrické a elektronické výrobky" v běžném komunálním odpadu a výrobci elektronických výrobků, na které se tato směrnice vztahuje, budou povinni odebírat takové výrobky zpět po skončení jejich životnosti. Společnost MSI splní požadavky na odebírání výrobků značky MSI, prodávaných v zemích EU, po skončení jejich životnosti. Tyto výrobky můžete odevzdat v místních sběrnách.

MAGYAR

Annak érdekében, hogy környezetünket megvédjük, illetve környezetvédőként fellépve az MSI emlékezteti Önt, hogy ...

Az Európai Unió ("EU") 2005. augusztus 13-án hatályba lépő, az elektromos és elektronikus berendezések hulladékairól szóló 2002/96/EK irányelve szerint az elektromos és elektronikus berendezések többé nem kezelhetőek lakossági hulladékként, és az ilyen elektronikus berendezések gyártói kötelessé válnak az ilyen termékek visszavételére azok hasznos élettartama végén. Az MSI betartja a termékvisszavétellel kapcsolatos követelményeket az MSI márkanév alatt az EU-n belül értékesített termékek esetében, azok élettartamának végén. Az ilyen termékeket a legközelebbi gyűjtőhelyre viheti.

ITALIANO

Per proteggere l'ambiente, MSI, da sempre amica della natura, ti ricorda che....

In base alla Direttiva dell'Unione Europea (EU) sullo Smaltimento dei Materiali Elettrici ed Elettronici, Direttiva 2002/96/EC in vigore dal 13 Agosto 2005, prodotti appartenenti alla categoria dei Materiali Elettrici ed Elettronici non possono più essere eliminati come rifiuti municipali: i produttori di detti materiali saranno obbligati a ritirare ogni prodotto alla fine del suo ciclo di vita. MSI si adeguerà a tale Direttiva ritirando tutti i prodotti marchiati MSI che sono stati venduti all'interno dell'Unione Europea alla fine del loro ciclo di vita. È possibile portare i prodotti nel più vicino punto di raccolta.

CONTENTS

Chapter 1
Product Overview

Thank you for choosing the IM-Q35 Mini ITX mainboard from MSI.

Based on the innovative **Intel® Q35** & **ICH9DO** controllers for optimal system efficiency, the IM-Q35 accommodates the latest **Intel® Core™ 2 Quad/Core™ 2 Duo/Pentium® Dual-Core /Celeron®** processors in Socket 775 and supports two 240-pin DDR2 DIMM slots to provide the maximum of 4GB memory capacity.

In the entry-level and mid-range market segment, the IM-Q35 can provide a high-performance solution for today's front-end and general purpose workstation, as well as in the future.

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Mainboard Specifications

Processor Support
- Intel® Core™ 2 Quad/Core™ 2 Duo/Pentium® Dual-Core /Celeron® processors in the LGA775 package
- Supports Intel® Yorkfield, Wolfdale
- Supports up to 95W processors only.

Supported FSB
- 1333/1066/ 800 MHz

Chipset
- North Bridge: Intel® Q35 chipset
- South Bridge: Intel® ICH9DO chipset

Memory Support
- DDRII 667/800 non-ECC memory (4GB Max)
- 2 * DDRII DIMMs (240pin / 1.8V)

LAN
- Supports PCIe GbE LAN by Intel® 82566DM for vPro
- Supports PCIe GbE LAN by Intel® 82573L

Audio
- Realtek ALC888 HD audio codec
- Flexible 5.1 channel audio with jack sensing

IDE
- 1 * IDE port
- Supports Ultra DMA 66/100/133 mode
- Supports PIO, Bus Master operation mode

SATA
- 4 * SATAII ports by ICH9DO
- Supports storage and data transfers at up to 3Gb/s

RAID
- SATA1~4 supports RAID 0/ 1/ 5/ 10 by ICH9DO
- Supports Intel® Matrix Storage Technology.

Connectors

● **Back panel**
- 1 * PS/2 mouse port
- 1 * PS/2 keyboard port
- 2 * RJ45 Gigabit LAN
- 4 * USB 2.0 ports
- 1 * RS-232 port
- 1 * VGA port
- 3 * flexible audio jacks

● **On-Board Pinheaders/ Connectors**
  - 2 * USB 2.0 pin headers
  - 1 * Chassis Intrusion Switch pin header
  - 1 * RS-232 connector
  - 1 * Front Panel Audio pin header
  - **1 * TPM connector**

Slots

  - 1 * PCIe x16 slot
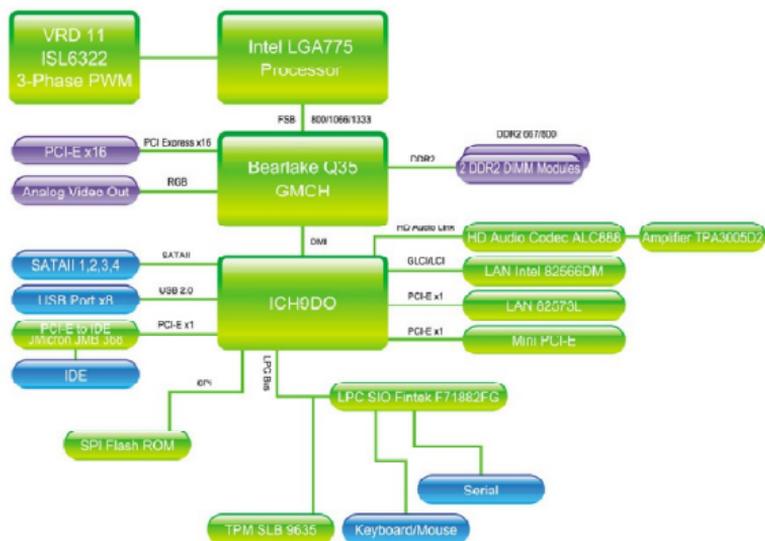 - 1 * Mini-PCIe slot

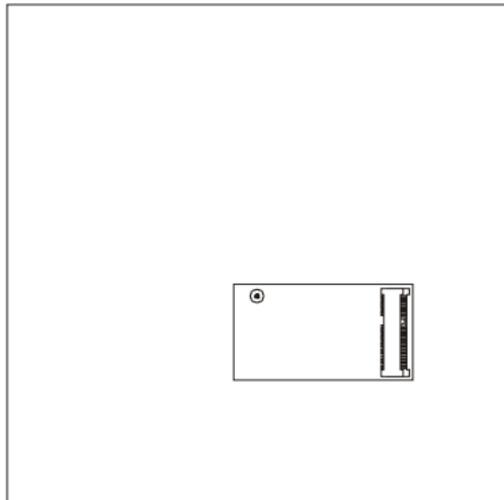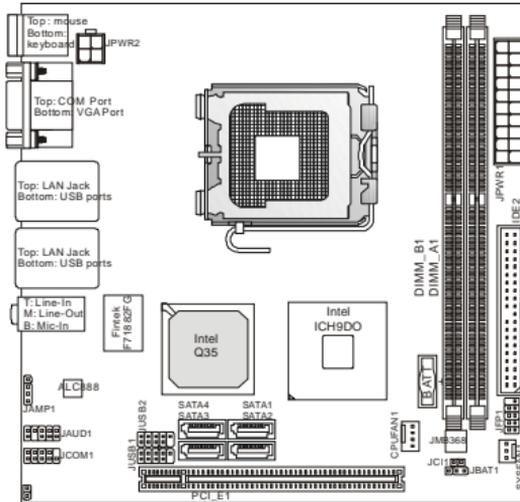**Form Factor**

  - **Mini-ITX (17.0cm X 17.0cm)**

Mounting
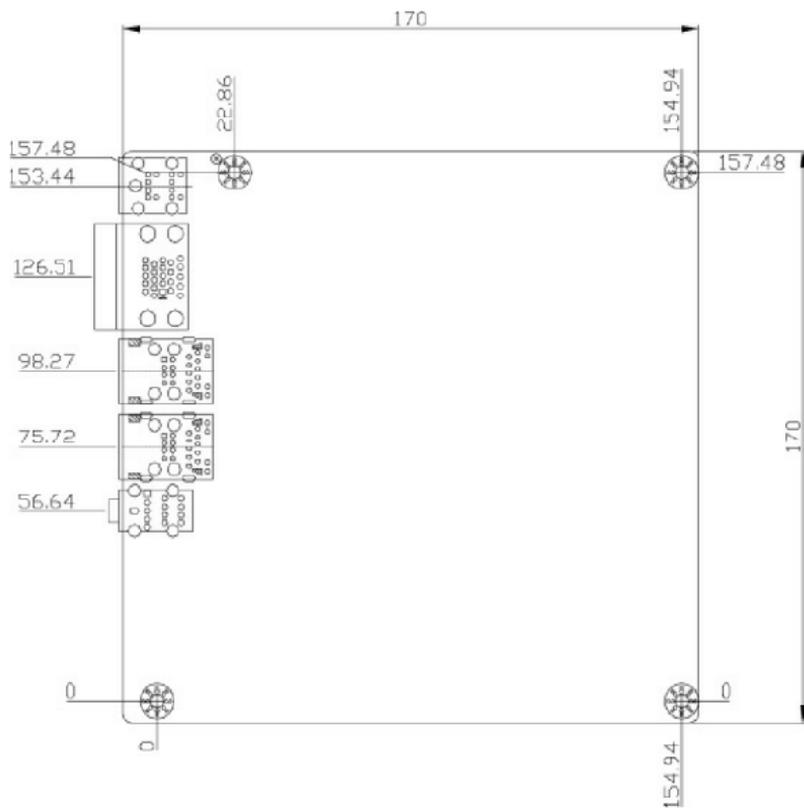
  - 4 * mounting holes

Block Diagram

Mainboard Layout

IM-Q35 Mainboard (Mini ITX)

Board Dimension

Back Panel & I/O Shield Drawing
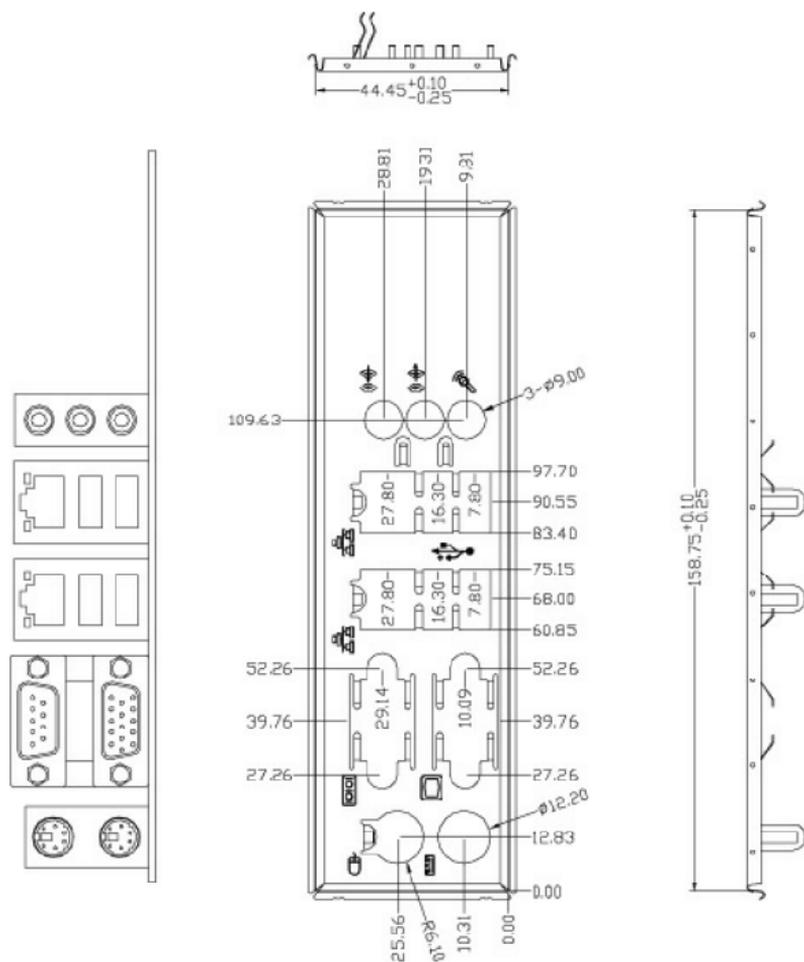
Power Consumption

MS-9820	3.3V	5V	12V	12V Main Connector	5V Standby	(-)12V
	Current(A)	Current(A)	Current(A)	Current(A)	Current(A)	Current(A)
Enter DOS(Stable)	0.86	3.4	2.35	0.46	0.068	0.037
Enter BIOS(Stable)	0.89	3.38	2.58	0.48	0.083	0.038
Idle	0.86	3.39	0.89	0.51	0.091	0.016
CPU Stress 100%	0.9	3.47	5.92	0.5	0.075	0.016
Windows stress(3dMARK2006)	0.89	4.82	3.34	0.5	0.075	0.029
Windows Desktop Standby S1 with/without two LANs connected (stable)	0.67	2.5	1.87	0.29	0.065	0.026
Windows Desktop Standby S3 with/without two LANs connected (stable)	0	0	0	0	0.666	0
Windows Desktop Hibernate S4 with/without two LANs connected (stable)	0	0	0	0	0.453	0
Windows Desktop Soft Off S5 with/without two LANs connected (stable)	0	0	0	0	0.457	0

Condition

Mainboard	IM-Q35
CPU	Yorkfield Q9450 2.66G
Memory	DDRII 1GB*2
HDD	WD 40G

Safety Compliance & MTBF

Certification		Standard number	Title of standard
CE	RFI	EN 55022:1998+A1:2000+A2:2003 Class B	Product family standard
		EN 6100-3-2:2000 Class D	Limits for harmonic current emission
		EN 6100-3-3:1995+A1:2001	Limitation of voltage fluctuation and flicker in low-voltage supply system
	Immunity	EN 55024:1998+A1:2001+A2:2003	Product family standard
BSMI		CNS 13438 乙類(1997年版)	
C-Tick		AS/NZS CISPR 22:2004	
FCC		FCC CFR Title 47 Part 15 Subpart B: 2005 Class B	
		CISPR 22: 2005	
VCCI		VCCI V-3:2004, Class B	
		VCCI V-4:2004, Class B	

Chapter 2
Hardware Setup

This chapter provides you with the information about hardware setup procedures. While doing the installation, be careful in holding the components and follow the installation procedures. For some components, if you install in the wrong orientation, the components will not work properly.

Use a grounded wrist strap before handling computer components. Static electricity may damage the components.

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Quick Components Guide

JPW1, *p.2-9*   JUSB1~2, *p.2-16*   CPU, *p.2-3*   SATA1~4,DDR2, *p.2-13,p.2-7*

JPWR1, *p.2-9*

Back Panel, *p.2-10*

IDE2, *p.2-12*

JAMP1, *p.2-17*

JAUD1, *p.2-15*

JCOM1, *p.2-15*

JFP1, *p.2-14*

SYSFAN1, *p.2-14*

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PCI_E, *p.2-19*

JBAT1, *p.2-18*

JSPD1, *p.2-17*

CPUFAN1, *p.2-14*

2-2
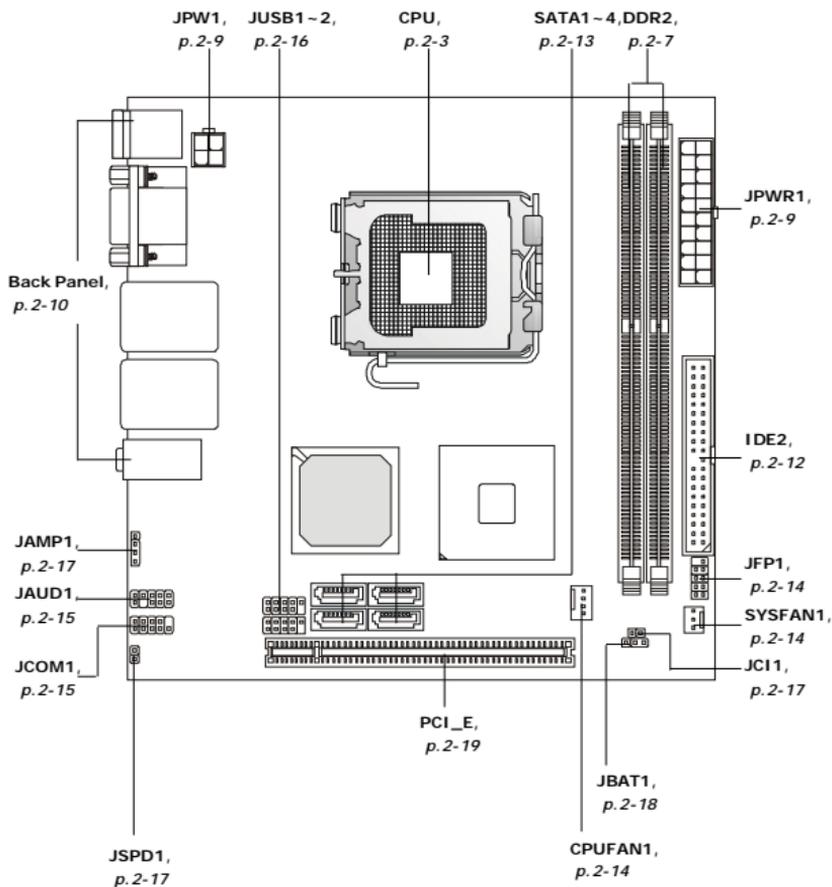
CPU (Central Processing Unit)

When you are installing the CPU, **make sure to install the cooler to prevent overheating.** If you do not have the CPU cooler, consult your dealer before turning on the computer.

Important

Overheating
Overheating will seriously damage the CPU and system. Always make sure the cooling fan can work properly to protect the CPU from overheating. Make sure that you apply an even layer of thermal paste (or thermal tape) between the CPU and the heatsink to enhance heat dissipation.

Replaceing the CPU
While replacing the CPU, always turn off the ATX power supply or unplug the power supply's power cord from the grounded outlet first to ensure the safety of CPU.

Overclocking
*This mainboard is designed to support overclocking. However, please make sure your components are able to tolerate such abnormal setting, while doing overclocking. Any attempt to operate beyond product specifications is not recommended. **We do not guarantee the damages or risks caused by inadequate operation or beyond product specifications.***

Introduction to LGA 775 CPU

The pin-pad side of LGA 775 CPU.
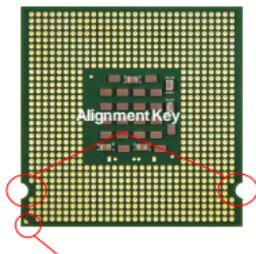
The surface of LGA 775 CPU. Remember to apply some thermal paste on it for better heat dispersion.

Alignment Key

Yellow triangle is the Pin 1 indicator

Alignment Key

Yellow triangle is the Pin 1 indicator

CPU & Cooler Installation

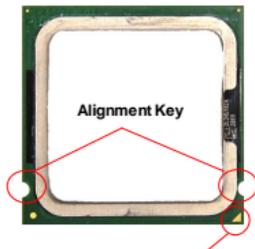When you are installing the CPU, **make sure the CPU has a cooler attached on the top to prevent overheating.** Meanwhile, do not forget to apply some thermal paste on CPU before installing the heat sink/cooler fan for better heat dispersion. Follow the steps below to install the CPU & cooler correctly. Wrong installation will cause the damage of your CPU & mainboard.

1. The CPU socket has a plastic cap on it to protect the contact from damage. Before you install the CPU, always cover it to protect the socket pin.

2. Remove the cap from lever hinge side (as the arrow shows).
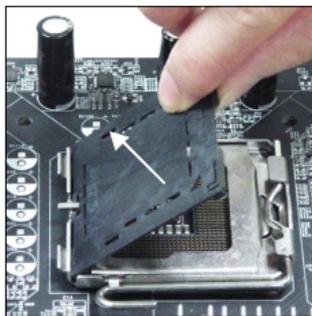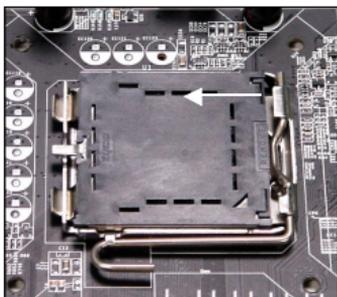
3. The pins of socket reveal.

4. Open the load lever.
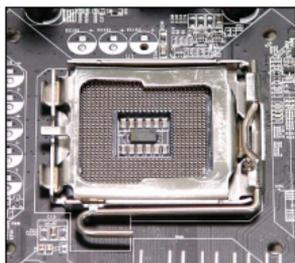
Important

1. Confirm if your CPU cooler is firmly installed before turning on your system.
2. Do not touch the CPU socket pins to avoid damaging.
3. The availability of the CPU land side cover depends on your CPU packing.

5. Lift the load lever up and open the load plate.
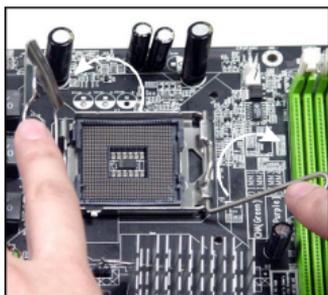
6. After confirming the CPU direction for correct mating, put down the CPU in the socket housing frame. Be sure to grasp on the edge of the CPU base. Note that the alignment keys are matched.
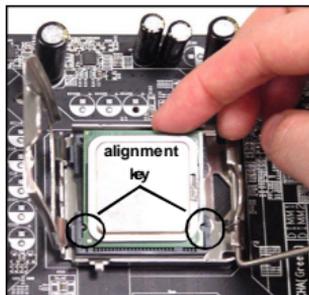
7. Visually inspect if the CPU is seated well into the socket. If not, take out the CPU with pure vertical motion and reinstall.

8. Cover the load plate onto the package.

9. Press down the load lever lightly onto the load plate, and then secure the lever with the hook under retention tab.

10. Align the holes on the mainboard with the heatsink. Push down the cooler until its four clips get wedged into the holes of the mainboard.
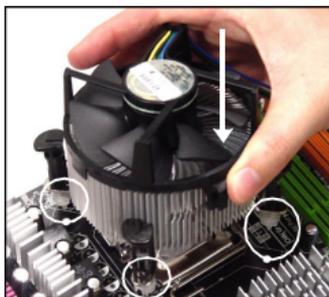
11. Press the four hooks down to fasten the cooler. Then rotate the locking switch (refer to the correct direction marked on it) to lock the hooks.
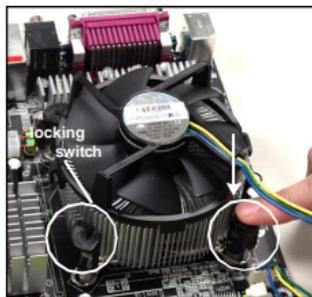
12. Turn over the mainboard to confirm that the clip-ends are correctly inserted.
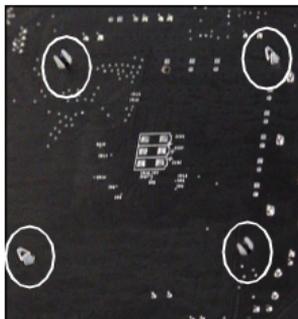
Important

1. Read the CPU status in BIOS (Chapter 3).
2. Whenever CPU is not installed, always protect your CPU socket pin with the plastic cap covered (shown in Figure 1) to avoid damaging.
3. Mainboard photos shown in this section are for demonstration of the CPU/ cooler installation only. The appearance of your mainboard may vary depending on the model you purchase.

Memory

These DIMM slots are used for installing memory modules.

DDR2
240-pin, 1.8V

64x2=128 pin   56x2=112 pin
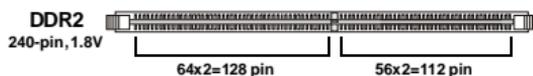
Single-Channel: All DIMMs in GREEN
Dual-Channel: Channel A in GREEN; Channel B in ORANGE

Dual-Channel mode Population Rule

In Dual-Channel mode, the memory modules can transmit and receive data with two data bus lines simultaneously. Enabling Dual-Channel mode can enhance the system performance. Please refer to the following illustrations for population rules under Dual-Channel mode.

1

DIMM_B1
DIMM_A1

Installed
Empty

Installing Memory Modules

1. The memory module has only one notch on the center and will only fit in the right orientation.

2. Insert the memory module vertically into the DIMM slot. Then push it in until the golden finger on the memory module is deeply inserted in the DIMM slot.

Important

You can barely see the golden finger if the memory module is properly inserted in the DIMM slot.

3. The plastic clip at each side of the DIMM slot will automatically close.

Volt   Notch
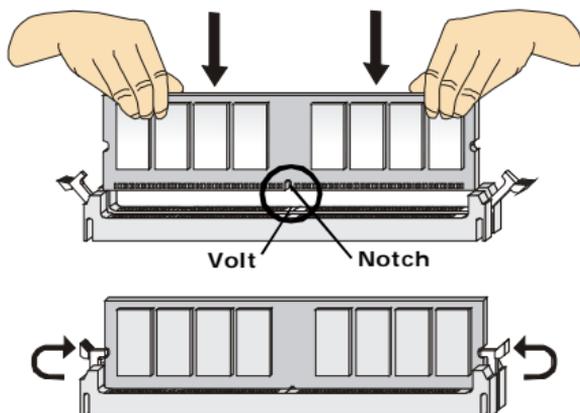
Important

- *DDR2 memory modules are not interchangeable with DDR and the DDR2 standard is not backwards compatible. You should always install DDR2 memory modules in the DDR2 DIMM slots.*
- *In Dual-Channel mode, make sure that you install memory modules of **the same type and density** in different channel DIMM slots.*
- *To enable successful system boot-up, always insert the memory modules into the **DIMM_A1** first.*

Power Supply

ATX 20-Pin System Power Connector: JPWR1

This connector allows you to connect to an ATX power supply. To connect to the ATX power supply, make sure the plug of the power supply is inserted in the proper orientation and the pins are aligned. Then push down the power supply firmly into the connector.

JPWR1
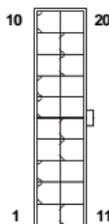
ATX1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	PS_ON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	NC
9	5V_SB	19	5V
10	12V	20	5V

ATX 12V Power Connector: JPW1

This 12V power connector is used to provide power to the CPU.

JPW1

Pin Definition

PIN	SIGNAL
1	GND
2	GND
3	12V
4	12V

Back Panel
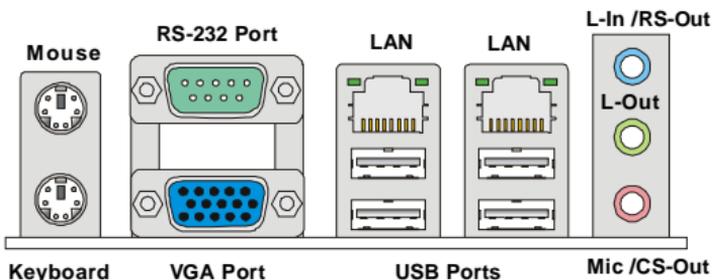
▶ **Mouse/Keyboard**
The standard PS/2® mouse/keyboard DIN connector is for a PS/2® mouse/keyboard.

▶ **RS-232 Port**
The serial port is a 16550A high speed communications port that sends/ receives 16 bytes FIFOs. You can attach a serial mouse or other serial devices directly to the connector.

▶ **VGA Port**
The DB15-pin female connector is provided for monitor.

▶ **LAN**
The standard RJ-45 LAN jack is for connection to the Local Area Network (LAN). You can connect a network cable to it.

Yellow — Green / Orange
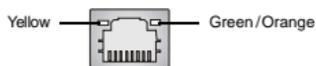
LED	Color	LED State	Condition
Left	Yellow	Off	LAN link is not established.
		On (steady state)	LAN link is established.
		On (brighter & pulsing)	The computer is communicating with another computer on the LAN.
Right	Green	Off	10 Mbit/sec data rate is selected.
		On	100 Mbit/sec data rate is selected.
	Orange	On	1000 Mbit/sec data rate is selected.

▶ **USB Port**
The USB (Universal Serial Bus) port is for attaching USB devices such as keyboard, mouse, or other USB-compatible devices.

▶ **Audio Ports**
These audio connectors are used for audio devices. You can differentiate the color of the audio jacks for different audio sound effects.

■ **Line-In / RS-Out (Blue)** - Line In is used for external CD player, tapeplayer or other audio devices. Rear-Surround Out in 4/5.1 channel mode.
■ **Line-Out (Green)** - Line Out, is a connector for speakers or headphones.
■ **Mic / CS-Out (Pink)** - Mic, is a connector for microphones. Center/Subwoofer Out in 5.1 channel mode.

Connectors

IDE Connector: IDE2

This connector supports IDE hard disk drives, optical disk drives and other IDE devices.

IDE2
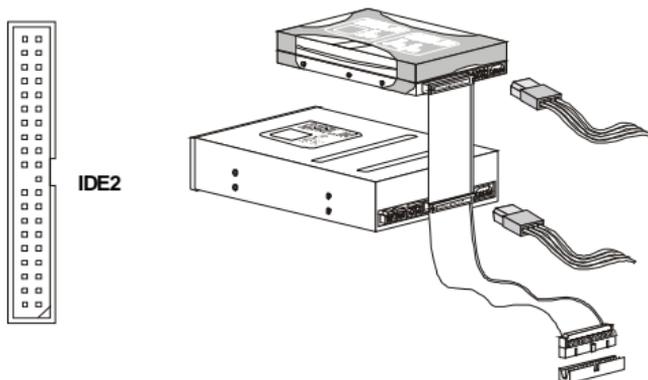
Important

If you install two IDE devices on the same cable, you must configure the drives separately to master / slave mode by setting jumpers. Refer to IDE device's documentation supplied by the vendors for jumper setting instructions.

Serial ATA Connector: SATA1 ~ SATA4

This connector is a high-speed Serial ATA interface port. Each connector can connect to one Serial ATA device.

SATA4   **SATA1**

SATA3   **SATA2**
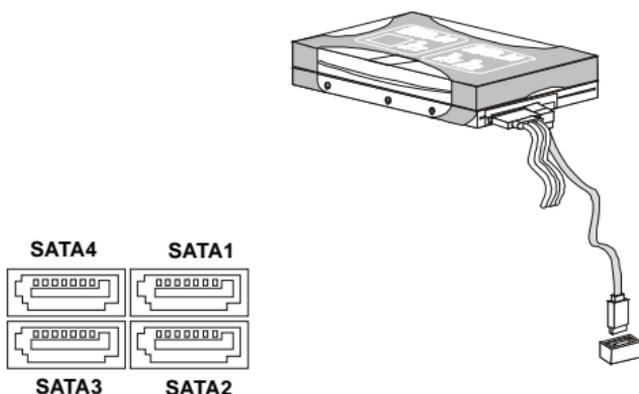
> **Important**
>
> *Please do not fold the Serial ATA cable into 90-degree angle. Otherwise, data loss may occur during transmission.*

Fan Power Connectors: CPUFAN1, SYSFAN1

The fan power connectors support system cooling fan with +12V. When connecting the wire to the connectors, always note that the red wire is the positive and should be connected to the +12V; the black wire is Ground and should be connected to GND. If the mainboard has a System Hardware Monitor chipset onboard, you must use a specially designed fan with speed sensor to take advantage of the CPU fan control.

```
┌─┐  GND
│□│  +12V
│□│  SENSOR
│□│  CONTROL
└─┘
CPUFAN1
```

```
SENSOR ┌─┐
+12V  │□│
GND   │□│
      └─┘
SYSFAN1
```
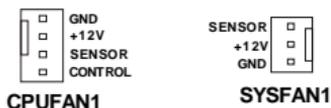
Important

Please refer to the recommended CPU fans at Intel® official website or consult the vendors for proper CPU cooling fan.

Front Panel Connector: JFP1

The mainboard provides one front panel connector for electrical connection to the front panel switches and LEDs. The JFP1 is compliant with Intel® Front Panel I/O Connectivity Design Guide.

```
        JFP1
      10 ┌─────┐ 9
Power  + │□ □ □│ + Reset
Switch - │□ □ □│ - Switch
Power  + │□ □ □│ - HDD
LED    - │□ □ □│ + LED
       2 └─────┘ 1
```
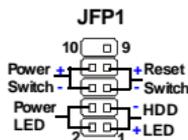
JFP1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	HDD LED+	2	PWR LED+/PWR LED+
3	HDD LED-	4	PWR LED-/SLP LED+
5	RESET-	6	PWR BTN-
7	RESET+	8	PWR BTN+
9	N/A	10	Key(no pin)

Front Panel Audio Connector: JAUD1

This connector allows you to connect the front panel audio and is compliant with Intel® Front Panel I/O Connectivity Design Guide.

$$\begin{matrix} 9 \\ 10 \end{matrix}\ \boxed{\begin{matrix} \square & \square & \square & \square & \square \\ \square & \square & \square & \square & \square \end{matrix}}\ \begin{matrix} 1 \\ 2 \end{matrix}\quad \text{JAUD1}$$

HD Audio Pin Definition

PIN	SIGNAL	DESCRIPTION
1	MIC_L	Microphone - Left channel
2	GND	Ground
3	MIC_R	Microphone - Right channel
4	PRESENCE#	Active low signal-signals BIOS that a High Definition Audio dongle is connected to the analog header. PRESENCE# = 0 when a High Definition Audio dongle is connected
5	LINE out_R	Analog Port - Right channel
6	MIC_JD	Jack detection return from front panel microphone JACK1
7	Front_JD	Jack detection sense line from the High Definition Audio CODEC jack detection resistor network
8	NC	No control
9	LINE out_L	Analog Port - Left channel
10	LINEout_JD	Jack detection return from front panel JACK2

RS-232 Port Connector: JCOM 1

This connector is a 16550A high speed communication port that sends/receives 16 bytes FIFOs. You can attach a serial device.

Pin Definition

JCOM1 $\begin{matrix} 2 \\ 1 \end{matrix}\ \boxed{\begin{matrix} \square & \square & \square & \square & \square \\ \square & \square & \square & \square & \square \end{matrix}}\ 9$

PIN	SIGNAL	DESCRIPTION
1	DCD	Data Carry Detect
2	SIN	Serial In or Receive Data
3	SOUT	Serial Out or Transmit Data
4	DTR	Data Terminal Ready
5	GND	Ground
6	DSR	Data Set Ready
7	RTS	Request To Send
8	CTS	Clear To Send
9	RI	Ring Indicate

Front USB Connector: JUSB1 ~ 2

These connectors, compliant with Intel® I/O Connectivity Design Guide, is ideal for connecting high-speed USB interface peripherals such as **USB HDD**, **digital cameras**, **MP3 players**, **printers**, **modems and the like**.

JUSB1

JUSB1 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB4-	4	USB5-
5	USB4+	6	USB5+
7	GND	8	GND
9	Key (no pin)	10	USBOC

JUSB2

JUSB2 Pin Definition

PIN	SIGNAL	PIN	SIGNAL
1	VCC	2	VCC
3	USB6-	4	USB7-
5	USB6+	6	USB7+
7	GND	8	GND
9	Key (no pin)	10	USBOC
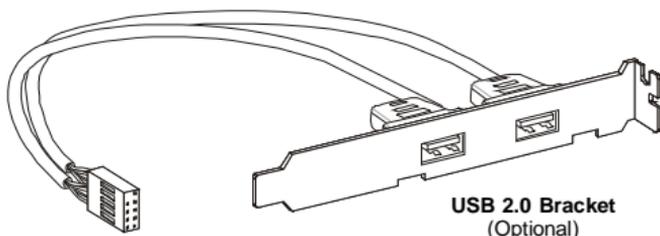
USB 2.0 Bracket
(Optional)

Important

Note that the pins of VCC and GND must be connected correctly to avoid possible damage.

Audio Amplifier Connector: JAMP1

The JAMP1 is used to connect audio amplifiers to enhance audio performance.

Pin Definition

PIN	SIGNAL
1	AMP_L-
2	AMP_L+
3	AMP_R-
4	AMP_R+

JAMP1

Chassis Intrusion Connector: JCI1

This connector connects to the chassis intrusion switch cable. If the chassis is opened, the chassis intrusion mechanism will be activated. The system will record this status and show a warning message on the screen. To clear the warning, you must enter the BIOS utility and clear the record.

GND 2 □ □ 1 CINTRU

JCI1

S/PDIF-Out Connector: JSPD1 (Optional, for HDMI ADD2 card only)

This connector is used to connect S/PDIF (Sony & Philips Digital Interconnect Format) interface for digital audio transmission **to the HDMI ADD2 card**.

2 □ GND
1 □ SPDIFO

JSPD1

Jumper

Clear CMOS Jumper: JBAT1

There is a CMOS RAM onboard that has a power supply from an external battery to keep the data of system configuration. With the CMOS RAM, the system can automatically boot OS every time it is turned on. If you want to clear the system configuration, set the jumper to clear data.

JBAT1

Keep Data   Clear Data

> **Important**
>
> *You can clear CMOS by shorting 2-3 pin while the system is off. Then return to 1-2 pin position. Avoid clearing the CMOS while the system is on; it will damage the mainboard.*

Slots

PCI (Peripheral Component Interconnect) Express Slot

The PCI Express slot supports the PCI Express interface expansion card.
The PCI Express x 16 slot supports up to 4.0 GB/s transfer rate.
The CON1 is Mini PCI-E connector for wireless LAN, TV tuner, and Robson NAND Flash.
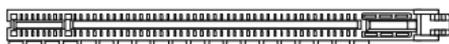
PCI Express x16 Slot

Mounting hole

Mini PCI-E Slot

Chapter 3
BIOS Setup

This chapter provides information on the BIOS Setup program and allows you to configure the system for optimum use.
You may need to run the Setup program when:

▶ An error message appears on the screen during the system booting up, and requests you to run SETUP.

▶ You want to change the default settings for customized features.

MSI
MICRO-STAR INTERNATIONAL

Entering Setup

Power on the computer and the system will start POST (Power On Self Test) process. When the message below appears on the screen, press <Del> key to enter Setup.

```
Press Del to enter SETUP
```

If the message disappears before you respond and you still wish to enter Setup, restart the system by turning it OFF and On or pressing the RESET button. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys.

Important

1. *The items under each BIOS category described in this chapter are under continuous update for better system performance. Therefore, the description may be slightly different from the latest BIOS and should be held for reference only.*

2. *Upon boot-up, the 1st line appearing after the memory count is the BIOS version. It is usually in the format:*

   A9820IMS V1.0 031508 where:

   1st digit refers to BIOS maker as A = AMI, W = AWARD, and P = PHOENIX.
   2nd - 5th digit refers to the model number.
   6th digit refers to the chipset as I = Intel, N = nVidia, and V = VIA.
   7th - 8th digit refers to the customer as MS = all standard customers.
   V1.0 refers to the BIOS version.
   031508 refers to the date this BIOS was released.

Control Keys

<↑>	Move to the previous item
<↓>	Move to the next item
<←>	Move to the item in the left hand
<→>	Move to the item in the right hand
<Enter>	Select the item
<Esc>	Jumps to the Exit menu or returns to the main menu from a submenu
<+/PU>	Increase the numeric value or make changes
<-/PD>	Decrease the numeric value or make changes
<F6>	Load Optimized Defaults
<F7>	Load Fail-Safe Defaults
<F10>	Save all the CMOS changes and exit

Getting Help

After entering the Setup menu, the first menu you will see is the Main Menu.

Main Menu

The main menu lists the setup functions you can make changes to. You can use the arrow keys (↑↓) to select the item. The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol (as shown in the right view) appears to the left of certain fields that means a sub-menu can be launched from this field. A sub-menu contains additional options for a field parameter. You can use ar-

▶ CPU Configuration
▶ IDE Configuration

row keys (↑↓) to highlight the field and press <Enter> to call up the sub-menu. Then you can use the control keys to enter values and move from field to field within a sub-menu. If you want to return to the main menu, just press the <Esc >.

General Help <F1>

The BIOS setup program provides a General Help screen. You can call up this screen from any menu by simply pressing <F1>. The Help screen lists the appropriate keys to use and the possible selections for the highlighted item. Press <Esc> to exit the Help screen.

The Menu Bar
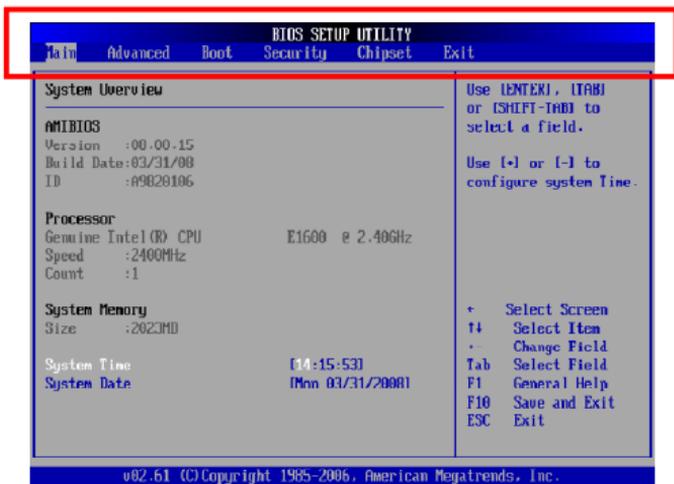
▶ **Main**
Use this menu for basic system configurations, such as time, date etc.

▶ **Advanced**
Use this menu to set up the items of special enhanced features.

▶ **PCIPnP**
This entry appears if your system supports PCI/PnP.

▶ **Boot**
Use this menu to specify the priority of boot devices.

▶ **Security**
Use this menu to set supervisor and user passwords.

▶ **Chipset**
This menu controls the advanced features of the onboard Northbridge and Southbridge.

▶ **Exit**
This menu allows you to load the BIOS default values or factory default settings into the BIOS and exit the BIOS setup utility with or without changes.

Main
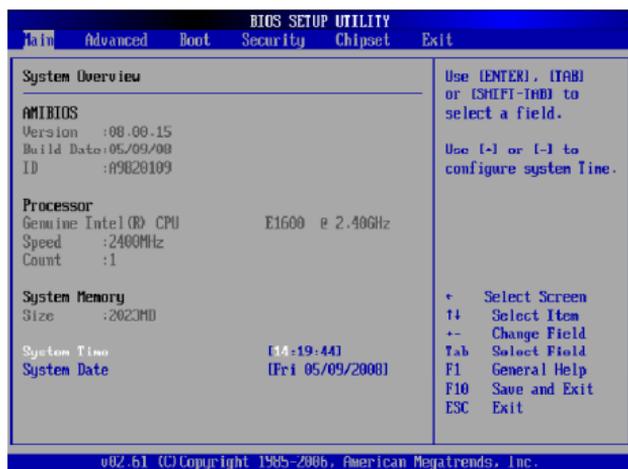
▶ **AMI BIOS, Processor, System Memory**
These items show the firmware and hardware specifications of your system. Read only.

▶ **System Time**
The time format is <Hour> <Minute> <Second>.

▶ **System Date**
The date format is <Day>, <Month> <Date> <Year>.

Advanced
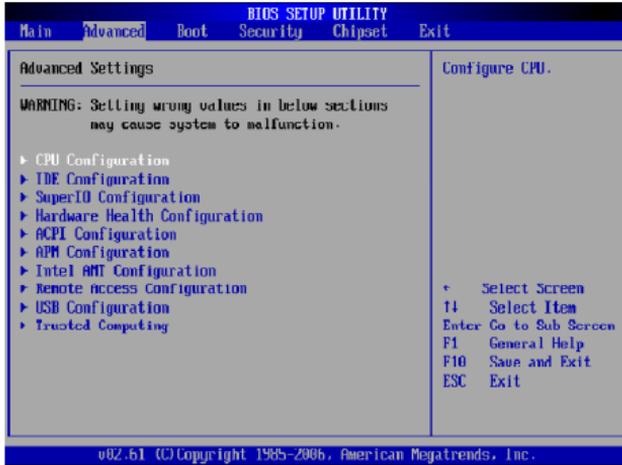
►**CPU Configuration**
These items show the advanced specifications of your CPU. Read only.
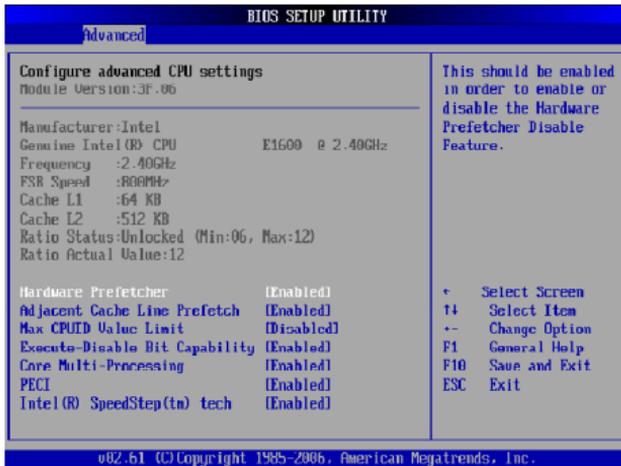
▶ **Hardware Prefetcher**
Setting to [Enabled], the processor's hardware prefetcher will be enabled and allowed to automatically prefetch data and code for the processor.

▶ **Adjacent Cache Line Prefetch**
Setting to [Enabled], the processor will retrieve the currently requested cache line, as well as the subsequent cache line.

▶ **Max CPUID Value Limit**
This item allows you to circumvent problems with older operating systems that do not support the Intel Pentium 4 processor with Hyper-Threading Technology. Setting to [Enabled], the processor will limit the maximum CPUID input value to 03h when queried, even if the processor supports a higher CPUID input value.

▶ **Execute-Disable Bit Capability**
Intel's Execute Disable Bit functionality can prevent certain classes of malicious "buffer overflow" attacks when combined with a supporting operating system. This functionality allows the processor to classify areas in memory by where application code can execute and where it cannot. When a malicious worm attempts to insert code in the buffer, the processor disables code execution, preventing damage or worm propagation.

▶ **Core Multi-Processing**
Enable this feature, if your processor supports multi-core.

▶ **PECI**
Platform Environment Control Interface (PECI) is able to provide digital data concerning processor temperature information.

▶ **Intel(R) SpeedStep(tm) tech**
This feature is used to enable/disable the Intel SpeedStep Technology.

▶**IDE Configuration**

```
                    BIOS SETUP UTILITY
      Advanced

 IDE Configuration                              Options

 SATA#1 Configuration         [Compatible]      Disabled
   Configure SATA#1 as        [IDE]             Compatible
                                                Enhanced
 ▶ Primary IDE Master         : [Not Detected]
 ▶ Secondary IDE Master       : [Not Detected]
 ▶ Third IDE Master           : [Not Detected]
 ▶ Fourth IDE Master          : [Not Detected]
 ▶ Fifth IDE Master           : [Not Detected]
 ▶ Fifth IDE Slave            : [Not Detected]

                                                →   Select Screen
                                                ↑↓  Select Item
                                                +-  Change Option
                                                F1  General Help
                                                F10 Save and Exit
                                                ESC Exit

      v02.61 (C)Copyright 1985-2006, American Megatrends, Inc.
```

▶**SATA#1 Configuration**
This item allows you to configurare IDE device mode.
 [Compatible] If Compatible selected, Legacy IDE Channels will be presented for configuration.
 [Enhanced] If Enhanced selected,"Configure SATA as" will be presented for setup.

▶**Configure SATA#1 as**
This setting specifies the function of the on-chip SATA controller.

▶**Primary/Secondary/Third/Fourth/Fifth IDE Master/Slave**

```
 Primary IDE Master

 Device     :Not Detected

 Type                          [Auto]
 LBA/Large Mode                [Auto]
 Block (Multi-Sector Transfer) [Auto]
 PIO Mode                      [Auto]
 DMA Mode                      [Auto]
 S.M.A.R.T.                    [Auto]
 32Bit Data Transfer           [Enabled]
```

 [Type]   Press PgUp/<+> or PgDn/<-> to select
                             [Manual], [None] or [Auto] type. Note that the

	specifications of your drive must match with the drive table. The hard disk will not work properly if you enter improper information for this category. If your hard disk drive type is not matched or listed, you can use [Manual] to define your own drive type manually.
[LBA/Large Mode]	Enabling LBA causes Logical Block Addressing to be used in place of Cylinders, Heads and Sectors
[Block(Multi-Sector Transfer)]	Any selection except Disabled determines the number of sectors transferred per block
[PIO Mode]	Indicates the type of PIO (Programmed Input/Output)
[DMA Mode]	Indicates the type of Ultra DMA
[S.M.A.R.T.]	This allows you to activate the S.M.A.R.T. (Self-Monitoring Analysis & Reporting Technology) capability for the hard disks. S.M.A.R.T is a utility that monitors your disk status to predict hard disk failure. This gives you an opportunity to move data from a hard disk that is going to fail to a safe place before the hard disk becomes offline.
[32 Bit Data Transfer]	Enables 32-bit communication between CPU and IDE card

▶ **Super IO Configuration**


```
Configure F71882F Super IO Chipset

Serial Port1 Address        [3F8/IRQ4]
Serial Port2 Address        [2F8/IRQ3]
 Serial Port2 Mode          [Normal]
Watch Dog                   [Disabled]
Chassis Intrusion           [Disabled]
```

▶ **Serial Port 1 / 2 Address**
Select an address and a corresponding interrupt for the serial port 1/2.

▶ **Serial Port2 Mode**
This item allows you to select mode for Serial Port2.

▶ **Watch Dog**
This feature is used to enable/disable the Watch Dog feature.

▶ **Chassis Intrusion**
The field enables or disables the feature of recording the chassis intrusion status and issuing a warning message if the chassis is once opened. To clear

the warning message, set the field to [Reset]. The setting of the field will automatically return to [Enabled] later.

▶ **Hardware Health Configuration**

```
Hardware Health Configuration

CPU Temperature            : 44°C/111°F
System Temperature         : 30°C/86°F

CPU FAN Speed              : 3816 RPM
System FAN Speed           : 1614 RPM

CPU Vcore                  : 1.272 V
5V                         : 5.084 V
12V                        : 12.320 V

CPU Smart FAN Mode         [Temperature Mode]
  CPU Smart Fan Target     [40°C]
  CPU Smart Fan Tolerance  [2°C]
System Smart FAN Mode      [Temperature Mode]
  System Smart Fan Target  [35°C]
  System Smart Fan Tolerance [2°C]
```

▶ **CPU Temperature, System Temperature, CPU FAN Speed, System FAN Speed, CPU Vcore, 5V, 12V**
These items display the current status of all of the monitored hardware devices/components such as CPU voltage, temperatures and all fans' speeds.

▶ **CPU/Systen Smart FAN Mode**
These items allow you to select the smart FAN mode.

▶ **CPU/System Smart FAN Target**
The mainboard provides the Smart Fan function which can control the CPU/ system fan speed automatically depending on the current temperature to keep it with in a specific range. You can select a fan target value here. If the current CPU/system fan temperature reaches to the target value, the smart fan function will be activated. It provides several sections to speed up for cooling down automaticlly.

▶ **CPU/System Smart Fan Tolerance**
When a particular temperature setting is selected for the previous item, CPU/ System Smart Fan Temperature, a temperature tolerance value between 1 to 5 can be adjusted here.

▶ **ACPI Configuration**

```
ACPI Settings

Suspend mode                  [Auto]
USB Device Wakeup From S3/S4  [Disabled]
ACPI Version Features         [ACPI v1.0]
```

▶ **Suspend mode**
This item specifies the power saving modes for ACPI function. If your
operating system supports ACPI, you can choose to enter the Standby
mode in S1 (POS) or S3 (STR) fashion through the setting of this field.
Options are:

[S1 (POS)]   The S1 sleep mode is a low power state. In this state,
               no system context is lost (CPU or chipset) and hard-
               ware maintains all system context.
[S3 (STR)]   The S3 sleep mode is a lower power state where the
               information of system configuration and open appli-
               cations/files is saved to main memory that remains
               powered while most other hardware components turn
               off to save energy. The information stored in memory
               will be used to restore the system when a "wake up"
               event occurs.

▶ **USB Device Wakeup from S3/S4**
This setting allows the activity of the USB device to wake up the system
from S3/S4 sleep state.

▶ **ACPI Version Features**
This setting allows you to select the ACPI version.

▶ **APM Configuration**

```
APM Configuration

Advanced Resume Event Controls
 Resume On PME#              [Disabled]
 Resume On RTC Alarm         [Disabled]
Restore on AC Power Loss     [Power Off]
```

▶ **Resume On PME#**
When setting to [Enabled], this setting allows your system to be awakened
from the power saving modes through any event on PME (Power
Management Event).

▶ **Resume On RTC Alarm**
When [Enabled], your can set the date and time at which the RTC (real-time
clock) alarm awakens the system from suspend mode.

▶ **Restore On AC Power Loss**
This item specifies whether your system will reboot after a power failure or
interrupt occurs. Settings are:
[Power Off]   Always leaves the computer in the power off state.
[Power On]   Always leaves the computer in the power on state.
[Last State]   Restores the system to the status before power failure
                or interrupt occurred.

3-11

▶ **Intel AMT Configuration**

Configure Intel AMT Parameters

Intel AMT Support   [Enabled]

▶ **Intel AMT Support**
This setting allows you to enable/disable the Intel Active Management
Technology(AMT) support.

▶ **Remote Access Configuration**

Configure Remote Access type and parameters

Remote Access   [Enabled]

Serial port number   [COM1]
    Base Address, IRQ   [3F8h, 4]
Serial Port Mode   [115200 8,n,1]
Flow Control   [None]
Redirection After BIOS POST   [Always]
Terminal Type   [ANSI]
VT-UTF8 Combo Key Support   [Enabled]
Sredir Memory Display Delay   [No Delay]

▶ **Remote Access**
This setting allows you to enable/disable remote access.

▶ **Serial port number**
This setting specifies the serial port for console redirection.

▶ **Serial Port Mode**
This setting allows you to select the serial port mode.

▶ **Flow Control**
This item specivies how the transfer via the port is controlled. The setting
must be the same on both the terminal and the server.
    [None]   The port is operated without transfer control.
    [XON/XOFF]   The port transfer control is carried out by software.
    [CTS/RTS]   The port transfer control is carried out by hardware.
                    This mode must be supported by the cable.

▶ **Redirection After BIOS POST**
This item specifies whether or not the console redirection is run after the
Power-On Self Test (POST).
    [Always]   Redirection is always active. (Some operating systems
                    may not work if this item is set to Always.)
    [Boot Loader]   Redirection is only active during POST.
    [Disabled]   Redirection is deactivated.

▶ **Terminal Type**
This setting specifies the terminal type (ANSI, VT100, VT-UTF8). This setting must be identical on both the terminal and the server.

▶ **VT-UTF8 Combination Key Support**
This setting allows you to enable/disable the VT-UTF8 combination key support for ANSI/VT100 terminals.

▶ **Sredir Memory Display Delay**
This setting allows you to select the delay before memory information is displayed.

▶ **USB Configuration**

▶ **Legacy USB Support**
Select [Enabled] if you need to use a USB-interfaced device in the operating system.

▶ **USB 2.0 Controller Mode**
This setting allows you to select the USB 2.0 controller mode HiSpeed (480 Mbps) or Full Speed (12 Mbps).

▶ **BIOS EHCI Hand-Off**
This setting allows you to enable/disable BIOS EHCI Hand-Off.

▶ **USB Beep Message**
This setting allows you to enable/disable USB Beep Message.

▶ **USB Mass Storage Device Configuration**

▶ **USB Mass Storage Reset Delay**
This option specifies amount of time the BIOS should wait after issuing a reset to the USB mass storage devices.

▶ **Emulation Type**
This option specifies the type of emulation has to provide for the device.

▶ **Trusted Computing**

```
Trusted Computing

TCG/TPM SUPPORT              [Yes]

Execute TPM Command          [Don't change]
Clearing the TPM             [Press Enter]
 TPM Enable/Disable Status   [Enabled]
 TPM Owner Status            [Owned]
```

▶ **TCG/TPM Support**
This setting controls the Trusted Platform Module (TPM) designed by the Trusted Computing Group (TCG). TPMs are special-purpose integrated circuits (ICs) built into a variety of platforms to enable strong user authentication and machine attestation—essential to prevent inappropriate access to confidential and sensitive information and to protect against *compromised networks.*

▶ **Excute TPM Command**
This item allows you to enable or disable the TPM security chip.

▶ **Clearing the TPM**
This item allows you to clear the user information saved in the TPM security chip. When you press <Enter>, a warning message will appear to ask if you want to clear the user information in the security chip. Use the left / right arrow key to select between [OK] and [Cancel], then press <Enter> to confirm your choice.

▶ **TPM Enable/Disable Status**
This item is not configurable.

▶ **TPM Owner Status**
This item is not configurable.

Boot
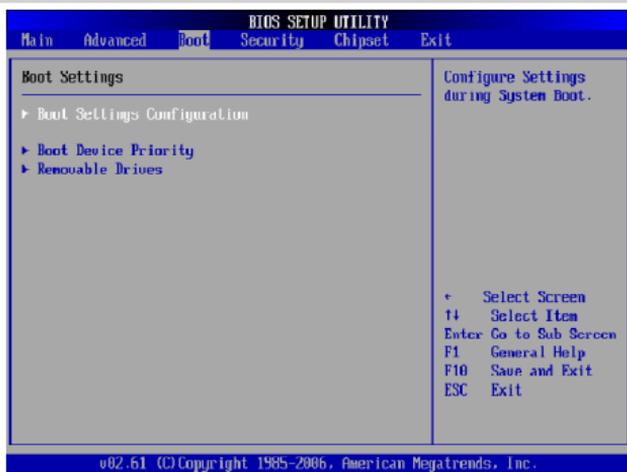
▶ **Boot Settings Configuration**

▶ **Quick Boot**
Enabling this setting will cause the BIOS power-on self test routine to skip some of its tests during bootup for faster system boot.

▶ **Bootup Num-Lock**
This setting is to set the Num Lock status when the system is powered on. Setting to [On] will turn on the Num Lock key when the system is powered on. Setting to [Off] will allow users to use the arrow keys on the numeric keypad.

▶ **Wait For 'F1' If Error**
When this setting is set to [Enabled] and the boot sequence encounters an error, it asks you to press F1. If disabled, the system continues to boot without waiting for you to press any keys.

▶ **Flash Write Protection**
This function protects the BIOS from accidental corruption by unauthorized users or computer viruses. When enabled, the BIOS data cannot be changed when attempting to update the BIOS with a Flash utility. To successfully update the BIOS, you will need to disable this Flash Protection function.

▶ **Boot Device Priority**

Boot Device Priority

1st Boot Device   [USB:USB Flash Disk]

▶ **1st Boot Device**
The items allow you to set the sequence of boot devices where BIOS
attempts to load the disk operating system. First press <Enter> to enter the
sub-menu. Then you may use the arrow keys to select the desired device,
then press <+>, <-> or <PageUp>, <PageDown> key to move it up/down in
the priority list.

▶ **Removable Drives**

Removable Drives

1st Drive   [USB:USB Flash Disk]

▶ **1st Drive**
This setting allows users to set the priority of the removable devices. First
press <Enter> to enter the sub-menu. Then you may use the arrow keys (
-¯) to select the desired device, then press <+>, <-> or <PageUp>,
<PageDown> key to move it up/down in the priority list.

Security
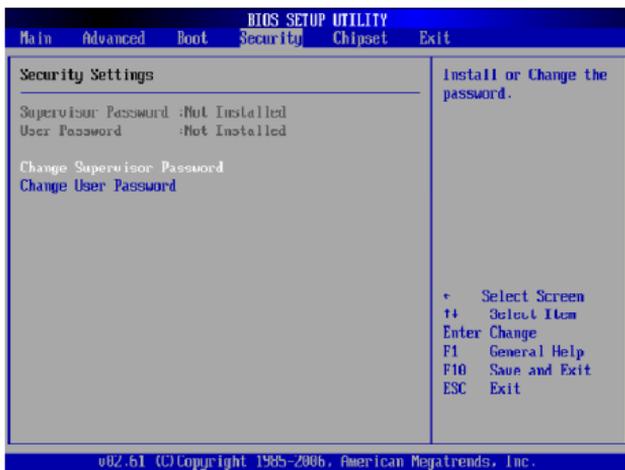
▶ **Supervisor Password / Change Supervisor Password**
Supervisor Password controls access to the BIOS Setup utility. These settings allow you to set or change the supervisor password.

▶ **User Password / Change User Password**
User Password controls access to the system at boot. These settings allow you to set or change the user password.

Chipset

▶ **North Bridge Configuration**

▶ **Initate Graphics Adapter**
This item specifies which VGA card is your primary graphics adapter.

▶ **Internal Graphics Mode Select**
The field specifies the size of system memory allocated for video memory.

▶ **DVMT Mode Select**
Intel's Dynamic Video Memory Technology (DVMT) allows the system to dynamically allocate memory resources according to the demands of the system at any point in time. The key idea in DVMT is to improve the efficiency of the memory allocated to either system or graphics processor.
It is recommended that you set this BIOS feature to DVMT Mode for maximum performance. Setting it to DVMT Mode ensures that system memory is dynamically allocated for optimal balance between graphics and system performance.

▶ **DVMT/FIXED Memory**
When set to DVMT/FIXED Mode, the graphics driver will allocate a fixed
amount of memory as dedicated graphics memory, as well as allow more
system memory to be dynamically allocated between the graphics
processor and the operating system.

▶ **South Bridge Chipset Configuration**

▶ **USB Functions**
This setting specifies the function of the onboard USB controller.

▶ **USB 2.0 Controller**
Set to [Enabled] if you need to use any USB 2.0 device in the operating
system that does not support or have any USB 2.0 driver installed, such as
DOS and SCO Unix.

▶ **GbE LAN(82566DM) Controller**
This setting disables/enables the onboard 82566DM Gigabit Ethernet
controller.

▶ **GbE LAN Boot**
When [Enabled], the BIOS attempts to boot from a LAN boot image before it
attempts to boot from a local storage device.

▶ **GbE Wake Up From S5**
This field specifies whether the system will be awakened from the S5 power
saving mode when activity or input signal of onboard LAN is detected.

▶ **GbE LAN(82573L) Controller**
This setting disables/enables the onboard 82573L Gigabit Ethernet controller.

▶ **ASF Support**
This feature serves to control the ASF functions. When set to [Enabled], the
ASF controller will be activated and allowed to communicate with a remote
management server, if and when one queries it.

▶ **Audio Amplifier Control**
This setting disables/enables the Audio Amplifier Control.

▶ **ME Subsystem Configuration**

```
ME Subsystem Configuration

BootBlock HECI Message          [Enabled]
HECI Message                    [Enabled]
End Of Post S5 HECI Message     [Enabled]

ME HECI Configuration
  ME-HECI                       [Enabled]
  ME-IDER                       [Disabled]
  ME-KT                         [Disabled]
```

▶ **BootBlock HECI Message**
Do not modify these options unless you are an advanced user. The default setting is Enabled.

▶ **HECI Message**
Do not modify these options unless you are an advanced user. The default setting is Enabled.

▶ **EndOf Post S5 HECI Message**
Do not modify these options unless you are an advanced user. The default setting is Enabled.

▶ **ME-HECI**
When this setting is set to [Enabled], Host Embedded Communication Interface (HECI) provides an interface for the exchange of message between the host software and the ME firmware.
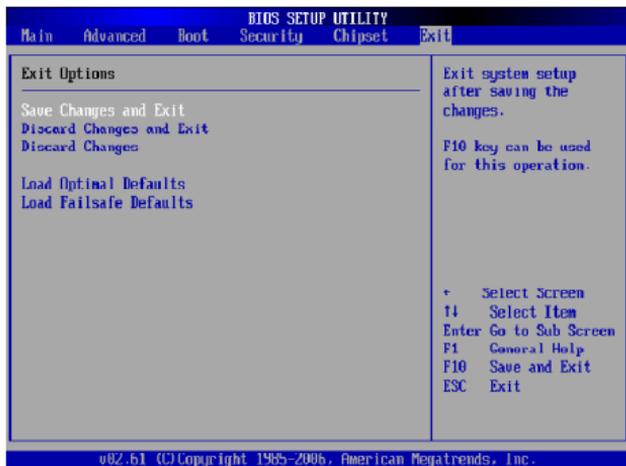
▶ **ME-IDER**
This setting disables/enables the IDE Redirection interface by which the remote management console is able to direct the client PC to boot.

▶ **ME-KT**
When this setting is set to [Enabled], the KT function help redirect keyboard and POST message to the remote management console and thus facilitates the control of the client machine through the network.

Exit

```
                        BIOS SETUP UTILITY
 Main    Advanced    Boot    Security    Chipset    Exit

  Exit Options                                  Exit system setup
                                                after saving the
  Save Changes and Exit                         changes.
  Discard Changes and Exit
  Discard Changes                               F10 key can be used
                                                for this operation.
  Load Optimal Defaults
  Load Failsafe Defaults




                                                →     Select Screen
                                                ↑↓    Select Item
                                                Enter Go to Sub Screen
                                                F1    General Help
                                                F10   Save and Exit
                                                ESC   Exit

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```

▶ **Save Changes and Exit**
Save changes to CMOS and exit the Setup Utility.

▶ **Discard Changes and Exit**
Abandon all changes and exit the Setup Utility.

▶ **Discard Changes**
Abandon all changes and continue with the Setup Utility.

▶ **Load Optimal Defaults**
Use this menu to load the default values set by the mainboard manufacturer specifically for optimal performance of the mainboard.

▶ **Load Failsafe Defaults**
Use this menu to load the default values set by the BIOS vendor for stable system performance.

Chapter 4
System Resources

This chapter provides information on the following system resources:

1. Watch Dog Timer Setting (p.4-2);

2. AMI POST Code (p.4-3);

3. Resource List (p.4-7).

MSI
MICRO-STAR INTERNATIONAL

Watch Dog Timer Setting

Software code
SIO_IDX equ 4EH
SIO_DTA equ 4FH
Timer equ 10; reset after 10 minutes

1. Enter configuration mode
   ```
   mov dx,SIO_IDX
   mov al,87h
   out dx,al
   out dx,al
   ```

2. Set to LDN 07
   ```
   mov dx,SIO_IDX
   mov al,07h
   out dx,al
   mov dx,SIO_DTA
   mov al,07h
   out dx,al
   ```

3. Set WatchDog Timer
   ```
   mov dx,SIO_IDX
   mov al,0f6h
   out dx,al
   mov dx,SIO_DTA
   mov al,Timer
   out dx,al
   ```

4. Exit configuration mode
   ```
   mov dx,SIO_IDX
   mov al,0AAh
   out dx,al
   ```

AMI POST Code

Bootblock Initialization Code Checkpoints

Checkpoint	Description
Before D0	If boot block debugger is enabled, CPU cache-as-RAM functionality is enabled at this point. Stack will be enabled from this point.
D0	Early Boot Strap Processor (BSP) initialization like microcode update, frequency and other CPU critical initialization. Early chipset initialization is done.
D1	Early super I/O initialization is done including RTC and keyboard controller. Serial port is enabled at this point if needed for debugging. NMI is disabled. Perform keyboard controller BAT test. Save power-on CPUID value in scratch CMOS. Go to flat mode with 4GB limit and GA20 enabled.
D2	Verify the boot block checksum. System will hang here if checksum is bad.
D3	Disable CACHE before memory detection. Execute full memory sizing module. If memory sizing module not executed, start memory refresh and do memory sizing in Boot block code. Do additional chipset initialization. Re-enable CACHE. Verify that flat mode is enabled.
D4	Test base 512KB memory. Adjust policies and cache first 8MB. Set stack.
D5	Bootblock code is copied from ROM to lower system memory and control is given to it. BIOS now executes out of RAM. Copies compressed boot block code to memory in right segments. Copies BIOS from ROM to RAM for faster access. Performs main BIOS checksum and updates recovery status accordingly.
D6	Both key sequence and OEM specific method is checked to determine if BIOS recovery is forced. If BIOS recovery is necessary, control flows to checkpoint E0. See *Bootblock Recovery Code Checkpoints* section of document for more information.
D7	Restore CPUID value back into register. The Bootblock-Runtime interface module is moved to system memory and control is given to it. Determine whether to execute serial flash.
D8	The Runtime module is uncompressed into memory. CPUID information is stored in memory.
D9	Store the Uncompressed pointer for future use in PMM. Copying Main BIOS into memory. Leaves all RAM below 1MB Read-Write including E000 and F000 shadow areas but closing SMRAM.
DA	Restore CPUID value back into register. Give control to BIOS POST (ExecutePOSTKernel). See *POST Code Checkpoints* section of document for more information.
DC	System is waking from ACPI S3 state
E1-E8 EC-EE	OEM memory detection/configuration error. This range is reserved for chipset vendors & system manufacturers. The error associated with this value may be different from one platform to the next.

Bootblock Recovery Code Checkpoints

Checkpoint	Description
E0	Initialize the floppy controller in the super I/O. Some interrupt vectors are initialized. DMA controller is initialized. 8259 interrupt controller is initialized. L1 cache is enabled.
E9	Set up floppy controller and data. Attempt to read from floppy.
EA	Enable ATAPI hardware. Attempt to read from ARMD and ATAPI CDROM.
EB	Disable ATAPI hardware. Jump back to checkpoint E9.
EF	Read error occurred on media. Jump back to checkpoint EB.
F0	Search for pre-defined recovery file name in root directory.
F1	Recovery file not found.
F2	Start reading FAT table and analyze FAT to find the clusters occupied by the recovery file.
F3	Start reading the recovery file cluster by cluster.
F5	Disable L1 cache.
FA	Check the validity of the recovery file configuration to the current configuration of the flash part.
FB	Make flash write enabled through chipset and OEM specific method. Detect proper flash part. Verify that the found flash part size equals the recovery file size.
F4	The recovery file size does not equal the found flash part size.
FC	Erase the flash part.
FD	Program the flash part.
FF	The flash has been updated successfully. Make flash write disabled. Disable ATAPI hardware. Restore CPUID value back into register. Give control to F000 ROM at F000:FFF0h.

POST Code Checkpoints

Checkpoint	Description
03	Disable NMI, Parity, video for EGA, and DMA controllers. Initialize BIOS, POST, Runtime data area. Also initialize BIOS modules on POST entry and GPNV area. Initialized CMOS as mentioned in the Kernel Variable "wCMOSFlags."
04	Check CMOS diagnostic byte to determine if battery power is OK and CMOS checksum is OK. Verify CMOS checksum manually by reading storage area. If the CMOS checksum is bad, update CMOS with power-on default values and clear passwords. Initialize status register A. Initializes data variables that are based on CMOS setup questions. Initializes both the 8259 compatible PICs in the system
05	Initializes the interrupt controlling hardware (generally PIC) and interrupt vector table.
06	Do R/W test to CH-2 count reg. Initialize CH-0 as system timer. Install the POSTINT1Ch handler. Enable IRQ-0 in PIC for system timer interrupt. Traps INT1Ch vector to "POSTINT1ChHandlerBlock."
07	Fixes CPU POST interface calling pointer.
08	Initializes the CPU. The BAT test is being done on KBC. Program the keyboard controller command byte is being done after Auto detection of KB/MS using AMI KB-5.
C0	Early CPU Init Start – Disable Cache – Init Local APIC
C1	Set up boot strap processor Information
C2	Set up boot strap processor for POST
C5	Enumerate and set up application processors
C6	Re-enable cache for boot strap processor
C7	Early CPU Init Exit
0A	Initializes the 8042 compatible Key Board Controller.
0B	Detects the presence of PS/2 mouse.
0C	Detects the presence of Keyboard in KBC port.
0E	Testing and initialization of different Input Devices. Also, update the Kernel Variables. Traps the INT09h vector, so that the POST INT09h handler gets control for IRQ1. Uncompress all available language, BIOS logo, and Silent logo modules.
13	Early POST initialization of chipset registers.
20	Relocate System Management Interrupt vector for all CPU in the system.
24	Uncompress and initialize any platform specific BIOS modules. GPNV is initialized at this checkpoint.
2A	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information.
2C	Initializes different devices. Detects and initializes the video adapter installed in the system that have optional ROMs.
2E	Initializes all the output devices.
31	Allocate memory for ADM module and uncompress it. Give control to ADM module for initialization. Initialize language and font modules for ADM. Activate ADM module.
33	Initializes the silent boot module. Set the window for displaying text information.
37	Displaying sign-on message, CPU information, setup key message, and any OEM specific information.
38	Initializes different devices through DIM. See *DIM Code Checkpoints* section of document for more information. USB controllers are initialized at this point.

39	Initializes DMAC-1 & DMAC-2.
3A	Initialize RTC date/time.
3B	Test for total memory installed in the system. Also, Check for DEL or ESC keys to limit memory test. Display total memory in the system.
3C	Mid POST initialization of chipset registers.
40	Detect different devices (Parallel ports, serial ports, and coprocessor in CPU, … etc.) successfully installed in the system and update the BDA, EBDA…etc.
52	Updates CMOS memory size from memory found in memory test. Allocates memory for Extended BIOS Data Area from base memory. Programming the memory hole or any kind of implementation that needs an adjustment in system RAM size if needed.
60	Initializes NUM-LOCK status and programs the KBD typematic rate.
75	Initialize Int-13 and prepare for IPL detection.
78	Initializes IPL devices controlled by BIOS and option ROMs.
7C	Generate and write contents of ESCD in NVRam.
84	Log errors encountered during POST.
85	Display errors to the user and gets the user response for error.
87	Execute BIOS setup if needed / requested. Check boot password if installed.
8C	Late POST initialization of chipset registers.
8D	Build ACPI tables (if ACPI is supported)
8E	Program the peripheral parameters. Enable/Disable NMI as selected
90	Initialization of system management interrupt by invoking all handlers. *Please note this checkpoint comes right after checkpoint 20h*
A1	Clean-up work needed before booting to OS.
A2	Takes care of runtime image preparation for different BIOS modules. Fill the free area in F000h segment with 0FFh. Initializes the Microsoft IRQ Routing Table. Prepares the runtime language module. Disables the system configuration display if needed.
A4	Initialize runtime language module. Display boot option popup menu.
A7	Displays the system configuration screen if enabled. Initialize the CPU's before boot, which includes the programming of the MTRR's.
A9	Wait for user input at config display if needed.
AA	Uninstall POST INT 1Ch vector and INT09h vector.
AB	Prepare BBS for Int 19 boot. Init MP tables.
AC	End of POST initialization of chipset registers. De-initializes the ADM module.
B1	Save system context for ACPI. Prepare CPU for OS boot including final MTRR values.
00	Passes control to OS Loader (typically INT19h).

Resource List

PCI Device

Device	Vender ID	Device ID	Bus#	Dev#	Func#
Host Bridge	8086	29B0	0	0	0
VGA Controller	8086	29B2	0	2	0
Communications Device	8086	29B4	0	3	0
IDE Controller	8086	29B6	0	3	2
16550 Controller	8086	29B7	0	3	3
Ethernet Controller	8086	10BD	0	19	0
USB UHEI	8086	2937	0	1A	0
USB EHCI	8086	293C	0	1A	7
High Definition Audio	8086	293E	0	1B	0
PCI/PCI Bridge	8086	2940	0	1C	0
PCI/PCI Bridge	8086	2942	0	1C	1
PCI/PCI Bridge	8086	2944	0	1C	2
USB UHCI	8086	2934	0	1D	0
USB UHCI	8086	2935	0	1D	1
USB UHCI	8086	2936	0	1D	2
USB EHCI	8086	293A	0	1D	7
Decode PCI/PCI Bridge	8086	244E	0	1E	0
ISA Bridge	8086	2914	0	1F	0
IDE Controller	8086	2920	0	1F	2
SMBus Controller	8086	2930	0	1F	3
IDE Controller	8086	2926	0	1F	5
Other Data Acquisition	8086	2932	0	1F	6
Ethernet Controller	8086	109A	2	0	0
IDE Controller	197B	2368	3	0	0